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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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*Ex parte* MAXWELL J. WELLS, DAVID WALLER, and
NAVDEEP S. DHILLON

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Appeal 2010-000672
Application 09/556,086
Technology Center 2100

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Before ALLEN R. MacDONALD, JASON V. MORGAN, and
ERIC B. CHEN, *Administrative Patent Judges*.

MORGAN, *Administrative Patent Judge*.

DECISION ON APPEAL

## STATEMENT OF THE CASE

### *Introduction*

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1 – 20, 22 – 24, 26, 27, 29 – 31, and 33 – 43. Claims 21, 25, 28, and 32 are canceled. App. Br. 2. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

### *Invention*

The invention relates to a method for characterizing a musical recording as a set of scalar descriptors, such as energy level, happiness, danceability, etc., each of which is based on human perception. Algorithms are empirically generated which correlate extracted parameters with judgments based on human perception to build a model for each of the scalars of human perception. *See* Abstract.

### *Exemplary Claims*

> 1. A method for building a computational model of human perception of a descriptor of music, comprising:
>
> a) extracting from each of at least 5[1] electronic representations of musical recordings at least two numeric parameters;

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[1] The claim limitation "5" is a small, whole number that neither refers to a parent claim nor represents reference characters corresponding to elements recited in the detailed description and the drawings. Thus, this claim limitation should be spelled out as "five." *See*, *e.g.*, GPO STYLE MANUAL, p. 278, § 12.23 (30th Ed., Sept. 2008). In the event of further prosecution, we recommend that the Examiner object to this informality in claim 1, as well as in claims 3, 5, 6, and 10. *See* MANUAL OF PATENT EXAMINING PROCEDURE (MPEP) § 608.01(m) (8th Ed., Rev. 8, July 2010).

b) for each recording, combining the numeric parameters with a weighting for each parameter to compute a single number representing the descriptor for that recording;

c) *adjusting the weightings for the parameters to find a set of weightings where each computed descriptor for each recording most closely matches perceptions reported for the recording by one or more human listeners*.

(Emphasis added).

18. A method for creating a database of differences between music recordings, comprising:

a) associating an identifier with each recording of a plurality of music recordings;

b) extracting from each recording of the plurality of recordings at least two numeric parameters;

*c) computing from the extracted parameters for each of a plurality of pairs of the recordings a number which represents the difference between the recordings of the pair; and*

*d) assembling the computed difference numbers into a database where each computed difference is associated with the identifier for each of the two recordings from which the difference was computed.*

(Emphasis added).

26. A method for finding a music recording which is perceived by humans to be like another music recording, comprising:

a) receiving a specification of a target music recording; and

b) *searching a database containing computed difference numbers between the target recording and a plurality of other recordings for those recordings which have a small computed difference number from the target music recording*.

(Emphasis added).

*Evidence and Rejection*

The Examiner rejects claims 1 – 20, 22 – 24, 26, 27, 29 – 31, and 33 – 43 under 35 U.S.C. § 103(a) as being unpatentable over K. Martin, E. Scheirer, and B. Vercoe, *Music Content Analysis through Models of Audition*, ACM '98 Workshop on Content Processing of Music for Multimedia Applications (Sept. 1998) ("Martin") and Blum (US 5,918,223, June 29, 1999). Ans. 4 – 11.

ISSUES

Did the Examiner err in finding that Martin and Blum teach or suggest all of the recitations of claims 1, 18, and 26?

ANALYSIS

*Claim 1*

Claim 1 recites "adjusting the weightings for the parameters to find a set of weightings where each computed descriptor for each recording most closely matches perceptions reported for the recording by one or more human listeners." Appellants argue that Martin "only describes the use of human tests to validate the capabilities of the system and select features used by the system, not to adjust **how** the features are used." App. Br. 16 (emphasis in the original).

The Examiner finds that "the claimed adjusting of the weighting[s] based on the perception of human listeners is exactly what is suggested by" Martin. Ans. 5. However, the Examiner provides insufficient evidence that Martin teaches or suggests adjusting the weightings of parameters so that each computed descriptors for each recording most closely matches perceptions reported for the recording by human listeners. The Examiner

finds that "[t]he advantages of weighting are realized by Blum where weighting is applied in order to emphasize perceptually important sections of musical sound." Ans. 16 (citing *Blum* 6:40 – 43). However, Blum merely weighs the mean and standard deviation computations for arrays of data values over the length of a sound file by amplitude data values. *Blum* 6:24 – 42. The Examiner does not show how this amplitude-based weighing cures the deficiencies of Martin. Therefore, the Examiner does not show that the combination of Martin and Blum teaches or suggests all the recitations of claim 1.

Accordingly, we do not sustain the Examiner's 35 U.S.C. § 103(a) rejection of claim 1, and of claims 2 – 17 and 34 – 43, which contain the same or similar recitations.

*Claim 18*

Claim 18 recites "computing from the extracted parameters for each of a plurality of pairs of the recordings a number which represents the difference between the recordings of the pair" and "assembling the computed difference numbers into a database where each computed difference is associated with the identifier for each of the two recordings from which the difference was computed." Appellants argue that while Blum discloses a method of calculating a distance between two sound recordings, Blum fails to teach or suggest "calculating differences between entire recordings and storing that difference in a database." App. Br. 19. Appellants argue that Blum instead teaches "using values stored in a database to calculate distances and sorting the results to find the shortest distance." *Id.* That is, Blum maintains a database of feature vectors and enables search and retrieval of a sound file whose feature vector is most

similar to a sample vector. *See Blum* 17:8 – 18:43. The Examiner does not show how the storage of and search for feature vectors teaches or suggests computing differences for each of a plurality of pairs of recordings and assembling the computed differences into a database.

Accordingly, we do not sustain the Examiner's 35 U.S.C. § 103(a) rejection of claim 18, and of claims 19, 20, and 22 – 24, which contain the same recitations.

*Claim 26*

Claim 26 recites "searching a database containing computed difference numbers between the target recording and a plurality of other recordings for those recordings which have a small computed difference number from the target music recording." Appellants argue that "[s]orting a set of distances calculated as described in Blum et al. to find the shortest distance is not the same as 'searching a database.'" App. Br. 20. However, Appellants do not persuasively distinguish between Blum's method of searching a database to find the recordings with feature vectors most similar to a sample feature vector and searching a database for recordings which have a small computed difference number from a target music recording.

Accordingly, we sustain the Examiner's 35 U.S.C. § 103(a) rejection of claim 26, and claims 27, 29 – 31, and 33, which are not argued separately.

DECISION

The Examiner's decision to reject claims 1 – 20, 22 – 24, and 34 – 43 under 35 U.S.C. § 103(a) is reversed.

The Examiner's decision to reject claims 26, 27, 29 – 31, and 33 under 35 U.S.C. § 103(a) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

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